



Europäisches Patentamt  
European Patent Office  
Office européen des brevets



(11) **EP 0 630 141 A3**

(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:  
03.07.1996 Bulletin 1996/27

(51) Int. Cl.<sup>6</sup>: **H04M 3/42**

(43) Date of publication A2:  
21.12.1994 Bulletin 1994/51

(21) Application number: **93403164.2**

(22) Date of filing: **23.12.1993**

(84) Designated Contracting States:  
**AT BE CH DE DK ES FR GB GR IE IT LI LU MC NL PT SE**

(30) Priority: **08.01.1993 US 2467**

(71) Applicant: **Multi-Tech Systems Inc**  
**Mounds View, Minnesota 55112 (US)**

(72) Inventors:  
• **Sharma, Raghu**  
**North Oaks, Minnesota 55127 (US)**  
• **Davis, Jeffrey P.**  
**Ham Lake, Minnesota 55304 (US)**  
• **Gunn, Timothy D.**  
**Mounds View, Minnesota 55432 (US)**

• **Li, Ping**  
**New Brighton, Minnesota 55112 (US)**  
• **Maltra, Sidhartha**  
**Saratoga, California 95070 (US)**  
• **Thanawala, Ashish**  
**Saratoga, California 95070 (US)**  
• **Young, Steve**  
**Saratoga, California 95070 (US)**

(74) Representative: **Belcher, Simon James**  
**Urquhart-Dykes & Lord**  
**Tower House**  
**Merrion Way**  
**Leeds LS2 8PA (GB)**

(54) **Computer-based multifunction personal communications system**

(57) A personal communications system is described which includes components of software and hardware operating in conjunction with a personal computer. The user interface control software operates on a personal computer, preferably within the Microsoft Windows® environment. The software control system communicates with hardware components linked to the software through the personal computer serial communications port. The hardware components include telephone communication equipment, digital signal processors, and hardware to enable voice, fax and data communication with a remote site connected through a standard telephone line. The functions of the hardware components are controlled by control software operating within the hardware component and from the software components operating within the personal computer. The major functions of the system are a telephone function, a voice mail function, a fax manager function, a multi-media mail function, a show and tell function, a terminal function and an address book function. The telephone function allows the present system to operate, from the users perspective, as a conventional telephone using either hands-free, headset or handset operation. The telephone function is more sophisticated than a standard telephone in that the present system converts

the voice into a digital signal which can be processed with echo cancellation, compressed, stored as digital data for later retrieval and transmitted as digital voice data concurrent with the transfer of digital information data.

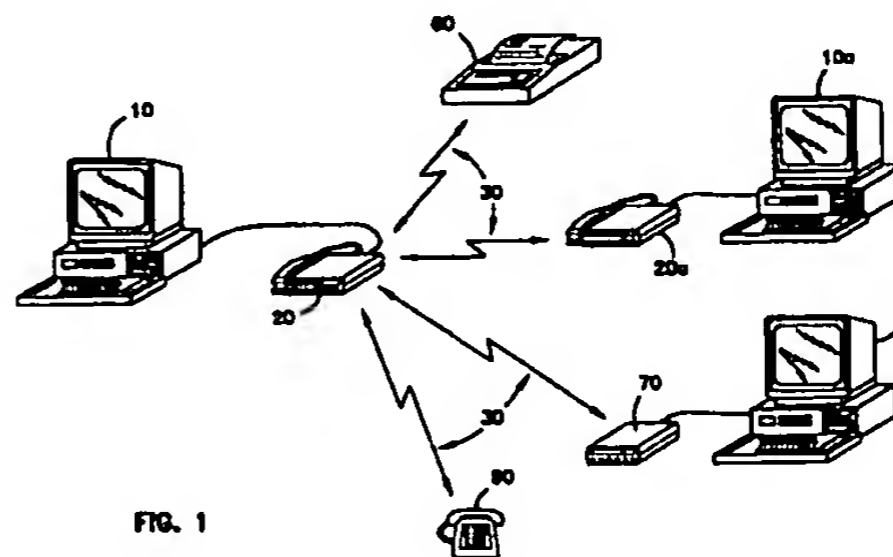


FIG. 1

EP 0 630 141 A3

Best Available Copy



European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number  
EP 93 40 3164

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
A	US-A-4 740 963 (ECKLEY)  * column 3, line 51 - column 7, line 63; figures 1,2 ***	1-3, 7-14,29	H04M3/42
A	IEEE GLOBAL TELECOMMUNICATIONS CONFERENCE AND EXHIBITION, vol. 1, 28 November 1988 HOLLYWOOD FLA US, pages 32-36, XP 000044908 KOMIYA ET AL. 'An approach to the multifunction graphic terminal for the ISDN environment' * page 32, right column, last paragraph - page 33, right column, paragraph 7 * * page 35, right column, paragraph 2 - page 36, right column, paragraph 3 * * figures 1,6 *	1,4,6, 10,18, 19,29	
A	ELECTRONIC DESIGN, vol. 35, no. 29, 10 December 1987 HASBROUCK HEIGHTS US, pages 85-88, XP 000004313 GULICK ET AL. 'Interface the ISDN to your PC with a voice/data board'	1,5,10, 29	TECHNICAL FIELDS SEARCHED (Int.Cl.5)
A	EP-A-0 488 685 (FUJITSU LIMITED)  * column 2, line 51 - column 3, line 56 * * column 5, line 6 - column 6, line 55; figures 1,2 * * column 8, line 5 - line 51; figure 3 * --- -/--	1,6, 8-10,29	H04Q H04M H04L G10L
The present search report has been drawn up for all claims <i>found</i>			
Place of search THE HAGUE		Date of completion of the search 18 April 1996	Examiner Lambley, S
<p><b>CATEGORY OF CITED DOCUMENTS</b></p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons * : member of the same patent family, corresponding document</p>			

EPO FORM 1500 03.92 (POMC01)



European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number  
EP 93 40 3164

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
A	MILCOM 92, vol. 1, 11 October 1992 SAN DIEGO US, pages 364-367, XP 000346753 SASAKI ET AL. 'Variable rate voice coding system' * page 364, left column, paragraph 4 - page 365, left column, paragraph 6 * * figure 1 *	1,10,16	
X	ADVANCES IN SPEECH CODING, 1991 DORDRECHT NL, pages 13-23, XP 000419258 CUPERMAN ET AL. 'Backward adaptive configurations for low-delay Vector Excitation Coding' * page 15, line 4 - page 17, line 7; figure 2 *	20-22	
A		1,7-10, 16,29	
A	EP-A-0 443 548 (NEC CORPORATION)  * abstract; claims 1,2 *	1,7-10, 16, 20-22,29	
Y	EP-A-0 429 054 (DIGITAL EQUIPMENT CORP.) * abstract * * column 2, line 40 - column 3, line 25 *	31	
A		1,5-10, 19,29,30	
Y	WO-A-91 07044 (INTELLIGENCE TECHNOLOGY) * abstract * * page 13, line 16 - page 17, line 17 *	31	
A		1,5-10, 19,29,30	
<div style="text-align: center;"> <p>---</p> <p>-/--</p> </div>			
The present search report has been drawn up for all claims <i>paid</i>			
Place of search <b>THE HAGUE</b>		Date of completion of the search <b>18 April 1996</b>	Examiner <b>Lambley, S</b>
<p><b>CATEGORY OF CITED DOCUMENTS</b></p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>I : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons @ : member of the same patent family, corresponding document</p>			

EPO FORM 1503 01.91 (P04C01)



European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number  
EP 93 40 3164

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
A	WO-A-92 20028 (STANDARD MICROSYSTEMS) * page 3, line 16 - page 4, line 14 * * page 7, line 28 - page 8, line 16 * ---	1,5-10, 19,29-31	
X	US-A-RE34034 (O'SULLIVAN) * abstract * * column 12, line 40 - column 13, line 31; figure 4 *	32	
A	---	10,18	
A	US-A-4 912 756 (HOP) * column 3, line 1 - line 44 * ---	10,18,32	
A	PHOENIX CONFERENCE ON COMPUTERS AND COMMUNICATIONS, 27 March 1991 SCOTTSDALE US, pages 459-464, XP 000299078 CASALE ET AL. 'Statistical voice/high-speed data multiplexing on a 64 kbit/s channel' -----		
The present search report has been drawn up for all claims <i>paid</i>			TECHNICAL FIELDS SEARCHED (Int.Cl.5)
Place of search THE HAGUE		Date of completion of the search 18 April 1996	Examiner Lambley, S
<p><b>CATEGORY OF CITED DOCUMENTS</b></p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons * : member of the same patent family, corresponding document</p>			

EPO FORM 1503 01.92 (P04001)



European Patent  
Office

### CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ All claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid,  
namely claims:
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

### LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions,  
namely:

SEE SHEET -B-

- ☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☒ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid,  
namely claims: 1-19, 20-22, 29, 30, 31, 32
- ☐ None of the further search fees has been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims,  
namely claims:



European Patent  
Office

EP 93403164 -B-

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims 1-19, 29, 30: A multifunction communication system, with interfaces to a personal computer and to a telephone line.
2. Claims 20-22: A voice compression system using gain and pitch prediction.
3. Claims 23-28: Line and acoustic path echo cancellation systems and methods.
4. Claim 31: A method of communicating voice and control data, without using mode control.
5. Claim 32: A method of maintaining a cellular telephone link.
6. Claims 33-37: A personal communication system control method, including managing voice mail, fax, mailing list and loudspeaking telephone functions.